

CLAIMS:

1. A blocked polyisocyanate adduct comprising:

5 to 95% by weight of at least one isocyanate component having at least one NCO group, said isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average molecular weight of up to 1000 g/mol and an average NCO functionality of 2-4;

5 to 70% by weight of at least one hydrophilicizing component containing at least one group which is reactive toward the at least one NCO group;

at least one blocking agent for blocking from 95 to 100% of the NCO groups which do not react with the hydrophilicizing component; and

up to 15% by weight of at least one neutralizing agent.

Sub A1 2. The blocked polyisocyanate adduct of claim 1, wherein said adduct is a pulverulent, waterdispersible adduct.

3. The blocked polyisocyanate adduct of claim 2, wherein the isocyanate component is at least one diisocyanate selected from the group consisting of 1,6-diisocyanatohexane (HDI), bis(4-isocyanatocyclohexyl)methane (HMDI), 1,5-diisocyanato-2-methylpentane (MPDI), 1,6-diisocyanato-2,4,4-trimethylhexane (TMDI) or 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate (IPDI).

4. The blocked polyisocyanate adduct of claim 3, wherein the diisocyanates have at least two isocyanate groups per molecule.

5. The blocked polyisocyanate adduct of claim 3, wherein the diisocyanate compound is prepared by trimerizing, allophanatizing, biuretizing or urethanizing the diisocyanates.

Sub A2 6. The blocked polyisocyanate adduct of claim 2, wherein the isocyanate is a product of at least one diisocyanate selected from the group consisting of 1,6-diisocyanatohexane (HDI), bis(4-isocyanatocyclohexyl)methane (HMDI), 1,5-diisocyanato-2-methylpentane (MPDI), 1,6-diisocyanato-2,4,4-trimethylhexane (TMDI) or 3-isocyanatomethyl-3,5,5-

trimethylcyclohexyl isocyanate (IPDI) and at least one selected from the group consisting of polyols and polyamines.

7. The polyisocyanate adduct of claim 2, wherein the isocyanate is at least one isocyanate selected from the group consisting of IPDI and IPDI isocyanurate.

5 8. The polyisocyanate adduct of claim 2, wherein the isocyanate is at least one isocyanate selected from the group consisting of tetramethylenexylylene diisocyanate (TMXDI), 2,4-diisocyanatotoluene and its technical mixtures with 2,6-diisocyanatotoluene and 4,4'-diisocyanatodiphenylmethane and its technical mixtures with 2,4'-diisocyanatodiphenylmethane.

10 Sub A3 9. The polyisocyanate adduct of claim 2, wherein the ionic component is selected from the group consisting of monohydroxyalkylcarboxylic acids, polyhydroxyalkylcarboxylic acids, -sulfonic acids, -phosphonic acids, monofunctional aminocarboxylic acids, and polyfunctional aminocarboxylic acids.

15 10. The blocked polyisocyanate adduct of claim 2, wherein the nonionic hydrophilicizing agent has at least one terminal hydroxyl group.

11. The blocked polyisocyanate adduct of claim 10, wherein the nonionic hydrophilicizing agent is polyethers is selected from the group consisting of polyethers containing 80-100% by weight of ethylene oxide units and polyethers containing 80-100% by weight of propylene oxide units.

20 12. The blocked polyisocyanate adduct of claim 11, wherein the polyether has a molecular weight of more than 350 g/mol.

25 13. The blocked polyisocyanate adduct of claim 2, wherein the blocking agent is at least one agent selected from the group consisting of monofunctional alcohols, polyfunctional alcohols, phenols, oximes, CH-acidic compounds, NH-acidic compounds, glycol monoethers and amino alcohols.

14. The blocked polyisocyanate adduct of claim 13, wherein the blocking agent is at least one agent selected from the group consisting of caprolactam, diethylethanolamine, diisopropylamine, dialkyl malonates, acetone oxime, acetophenone oxime, methyl ethyl ketone oxime, triazole and dimethylpyrazole.

<sup>5</sup> Sub A4 → 15. The blocked polyisocyanate adduct of claim 2, wherein said neutralizing agent is present in an amount greater than 0% by weight.

16. The blocked polyisocyanate adduct of claim 15, wherein the neutralizing agent is capable of forming salts.

17. The blocked polyisocyanate adduct of claim 16, wherein the neutralizing agent is an agent selected from the group consisting of organic acids, inorganic acids, organic bases, and inorganic bases.

18. The blocked polyisocyanate adduct of claim 17, wherein the base used as a neutralizing agent is selected from the group consisting of ammonia, amines and amino alcohols.

19. The blocked polyisocyanate adduct of claim 17, wherein the acid used as a neutralizing agent is selected from the group consisting of formic, acetic, lactic and benzoic acid.

20. The blocked polyisocyanate adduct of claim 17, wherein the degree of neutralization of the neutralizing agent is 0.5 – 1.0.

21. The blocked polyisocyanate adduct of claim 2, wherein said adduct further comprises admixed hydrophobic blocked isocyanates.

22. The blocked polyisocyanate adduct of claim 2, wherein said adduct is used in aqueous dispersions as a crosslinker resin.

23. The blocked polyisocyanate adduct of claim 2, wherein said adduct is used in polyurethane dispersions.

24. The blocked polyisocyanate adduct of claim 2, wherein said adduct is used in acrylic dispersions.

25. A process for the water-free preparation of a pulverulent, water-dispersible, blocked polyisocyanate adduct comprising:

reacting in an organic auxiliary solvent 5 to 95% by weight of at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average molecular weight of up to 1000 g/mol and an average NCO functionality of 2-4 with 5 to 70% by weight of at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups; and

blocking any remaining unreacted NCO groups with at least one blocking agent for blocking from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component.

26. The process of claim 25, wherein the adduct is neutralized by up to 15% by weight of at least one neutralizing agent and the organic auxiliary solvent is subsequently removed.